

CLAIMS

What is claimed is:

1. An apparatus comprising an electrically heated composite umbilical means installed within a subsea flowline containing produced hydrocarbons as an immersion heater means to prevent waxes and hydrates from forming within said flowline and blocking said flowline, whereby said electrically heated composite umbilical means possesses at least one electrical conductor disposed within said composite umbilical means that conducts electrical current that is used to heat said electrically heated composite umbilical means within said subsea flowline.

2. A method of installing an electrically heated composite umbilical means within a previously existing subsea flowline containing produced hydrocarbons to make an immersion heater means to prevent waxes and hydrates from forming within said flowline and blocking said flowline.

3. A method of using an umbilical conveyance means to convey into an existing subsea flowline possessing produced hydrocarbons an electrically heated composite umbilical means used as an immersion heating means to prevent waxes and hydrates from forming within said flowline and blocking said flowline.

4. A method of using an umbilical conveyance means to convey into an existing subsea flowline containing produced hydrocarbons an electrically heated umbilical means used as an immersion heating means to prevent waxes and hydrates from forming within said flowline and blocking said flowline.

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1 5. A method of providing artificial lift to produced
2 hydrocarbons within a subsea flowline comprising at least the
3 steps of:

4 (a) attaching a progressing cavity pump to an electric
5 motor to make an electrically energized pump;

6 (b) attaching said electrically energized pump to
7 to a first end of a tubular composite umbilical possessing a
8 multiplicity of electrical conductors within the wall of said
9 tubular composite umbilical;

10 (c) conveying into said flowline said electrically
11 energized pump attached to said first end of said composite
12 tubular umbilical;

13 (d) using first and second of said multiplicity of
14 electrical conductors to electrically heat said composite
15 umbilical to prevent waxes and hydrates from blocking the
16 flow of said produced hydrocarbons within said flowline; and

17 (e) using at least third and fourth electrical
18 conductors of said multiplicity of electrical conductors to
19 provide electrical energy to said electrically energized
20 pump, whereby said progressing cavity pump provides
21 artificial lift to said produced hydrocarbons within said
22 subsea flowline.

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24 6. A method of providing artificial lift to produced
25 hydrocarbons within a subsea flowline comprising at least the
26 steps of:

27 (a) attaching a hydraulic pump to an electric motor to
28 make an electrically energized pump;

29 (b) attaching said electrically energized pump to
30 to a first end of a tubular composite umbilical possessing a
31 multiplicity of electrical conductors within the wall of said
32 tubular composite umbilical;

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Rig-2

1 (c) conveying into said flowline said electrically
2 energized pump attached to said first end of said composite
3 tubular umbilical;

4 (d) using first and second of said multiplicity of
5 electrical conductors to electrically heat said composite
6 umbilical to prevent waxes and hydrates from blocking the
7 flow of said produced hydrocarbons within said flowline; and

8 (e) using at least third and fourth electrical
9 conductors of said multiplicity of electrical conductors to
10 provide electrical energy to said electrically energized
11 pump, whereby said electrically energized pump provides
12 artificial lift to said produced hydrocarbons within said
13 subsea flowline.

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Rig-2